Annual Transportation System Performance Report




LINCOLN
MPO
METROPOLITAN PLANNING ORGANIZATION



January 2018

Introduction

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Performance-based transportation planning affords a structure to ensure that scarce resources are used effectively and equitably. The Lincoln MPO 2040 Long Range Transportation Plan (LRTP) is a performance-based plan – the community values of transportation are woven into the goals, objectives, and performance measures. The LRTP is based on a set of goals intended to implement the vision and support the transportation needs and community values, while aligning with national goals and federal planning factors. The purpose of this Annual Transportation System Performance Report is to evaluate and monitor changes in the transportation system, and assess whether the LRTP goals are being achieved.

This report is organized by the seven goals of the LRTP. For each performance measure, available current and historic data show the current system performance and the trajectory of historic trends, providing insight into the projects, strategies, and policies needed to meet the stated performance targets. Specific performance targets have been identified for some performance measures; in other cases, a desired trend (increase, decrease, or maintain) has been identified. Following is an overview of the LRTP goals, a list of performance measures under each goal and the page on which more detailed information for each performance measure can be found.

Maintenance Goal: A well-maintained transportation system.

Mobility and System Reliability Goal: An efficient, reliable, and well-connected transportation system for moving people and freight.

Livability and Travel Choice Goal: A multimodal system that provides travel options to support a more compact, livable urban environment.

Safety and Security Goal: A safe and secure transportation system.

Economic Vitality Goal: A transportation system that supports economic vitality for residents and businesses.

Environmental Sustainability Goal: A transportation system that enhances the natural, cultural, and built environment.

Funding and Cost Effectiveness Goal: Collaboration in funding transportation projects that maximizes user benefits.

Maintenance

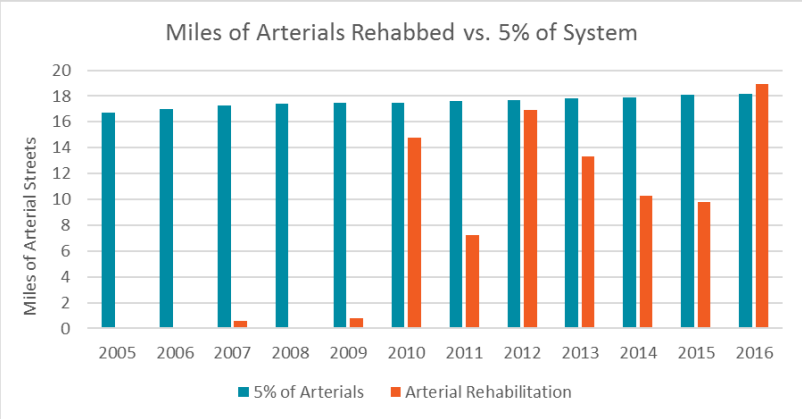
Goal: A well-maintained transportation system.

1

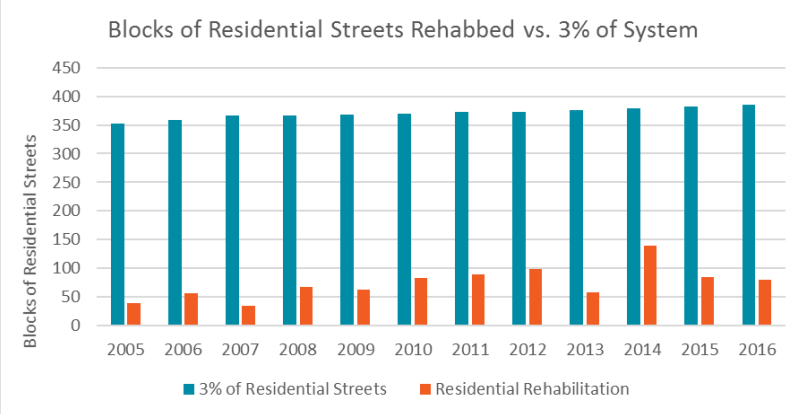
Performance Measure 1:
Percent of streets rehabilitated

Baseline Data:

Percent of Arterial Streets Rehabilitated = 5.2% (2016)



Percent of Residential Streets Rehabilitated = 0.6% (2016)



Desired Trend and Performance Targets:

- Rehabilitate five percent of the arterial street system each year.
- Rehabilitate three percent of the residential street system each year.

Data Sources:

- City of Lincoln Public Works and Utilities Department

Why is this important?

The City of Lincoln's pavement management system aims to make the best use of limited funding to keep the City's transportation system functional. Lincoln has about 2,800 lane miles of streets. Maintaining an updated survey of pavement condition provides important data on how to prioritize street repair projects.

Key Observations

The charts to the left show the actual miles (or blocks) of street rehabilitation (in orange) compared to the City's goal (in blue) of rehabilitating 5 percent of arterials and 3 percent of residential streets annually. That is, each arterial street would be rehabilitated once every 20 years, and each residential street once every 33 years.

Greater priority is given to arterial streets due to their higher traffic volumes, speeds and potential for rapid deterioration.

How are we doing?

In 2016, the City was able to rehabilitate 5.2 percent of the arterial street network and approximately 75 blocks of residential streets.

What does this mean?

The City's increased investment in street rehabilitation in 2016 resulted in a considerable improvement in the condition of the arterial streets. Additional funds are needed to meet the goal to rehabilitate 3% of residential streets.

Maintenance

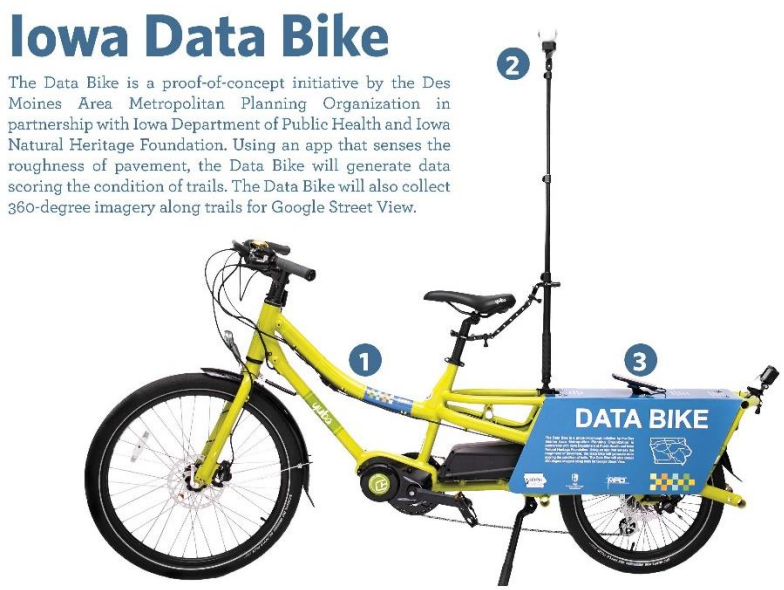
Goal: A well-maintained transportation system.

2

Performance Measure 2:
Trail conditions

Baseline Data:

The Lincoln Parks and Recreation Department is working to develop a methodology for assessing trail conditions, which is anticipated to begin in 2018. One potential method for collecting data is by using roughness calculation software to survey the full trail network. The results would be used to establish acceptable parameters and develop mapping of relative condition of trail segments. This type of data could be collected using hardware mounted to an electrically powered bicycle (see prototype below). Data would be translated into GIS and used to create maps showing relative trail condition throughout the system.



Desired Trend and Performance Targets:

Not available.

Why is this important?

The community treasures Lincoln's trail system, and maintaining the trails in a state of good repair is important. Collecting data on the condition of the trail segments will be helpful to the Lincoln Parks and Recreation Department in scheduling major rehabilitation projects.

Key Observations

Not available.

How are we doing?

Not available.

What does this mean?

Not available.

Maintenance

Goal: A well-maintained transportation system.

3

Performance Measure 3:
Square feet of sidewalks replaced

Baseline Data:

Square feet of sidewalks replaced = 165,000 (2017)

Desired Trend:

The sidewalk maintenance program is expected to continue to be funded with an annual budget of at least $1 million to meet the repair needs of the sidewalk system.

Data Sources:

- City of Lincoln Public Works and Utilities Department

Why is this important?

Many sidewalks in older areas of the City have developed cracks and heaving pavement and require maintenance, making them particularly difficult for those with disabilities. The maintenance of the sidewalks is important so that the network of sidewalks remains an asset to the community.

Key Observations

An extensive effort and investment ($4 million) went toward sidewalk repairs in 2015. The 2016 and 2017 annual budget of $1 million were more in line with historic investments in sidewalk repairs.

How are we doing?

In 2017, over 165,000 square feet of sidewalk panels were replaced, which equates to approximately 7.8 miles of sidewalk.

What does this mean?

The City maintains over 1,700 miles of sidewalk. Continual maintenance is required to ensure the sidewalks are usable for pedestrians of all ages and abilities.

Maintenance

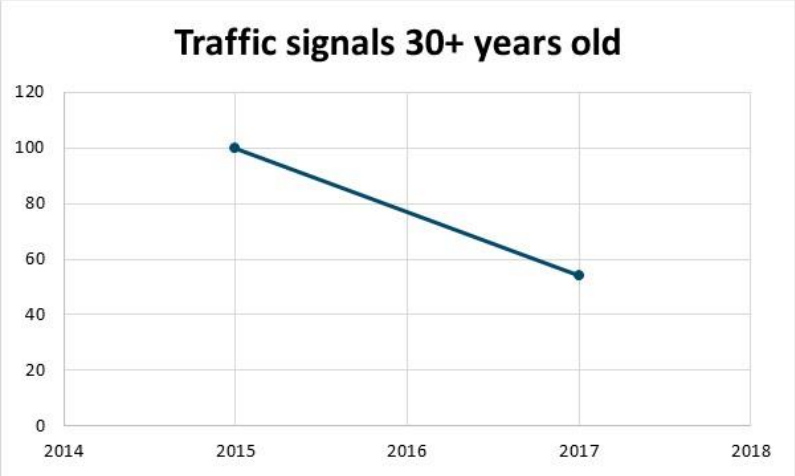
Goal: A well-maintained transportation system.

4

Performance Measure 4:
Age of traffic signals

Baseline Data:

Number of traffic signals 30+ years old = 54 (2017) that were built in 1987 or sooner



Desired Trend:

Continue to reduce the number of outdated traffic signals by 15-20%, as resources become available.

Why is this important?

The City of Lincoln maintains 422 traffic signals, including 336 full intersection signals, as well as pedestrian crossings, prepare-to-stop, and flasher locations. In 2015, over 20 percent of the City's traffic signal installations were older than 30 years. By replacing these older traffic signals, current signal technology can be introduced, resulting in not only reduced signal maintenance requirements, but also improved signal operations and coordination.

Key Observations

In the past two years, the City of Lincoln has replaced 46 outdated traffic signals.

How are we doing?

The number of outdated traffic signals has been reduced from 100 in 2015 down to 54 in 2017 – significant progress in reaching the City's goal of replacing all outdated traffic signals.

What does this mean?

With new traffic signals, the City is able use current technology to improve signal operations and reduce delays.

Data Sources:

- City of Lincoln Public Works and Utilities Department

Maintenance

Goal: A well-maintained transportation system.

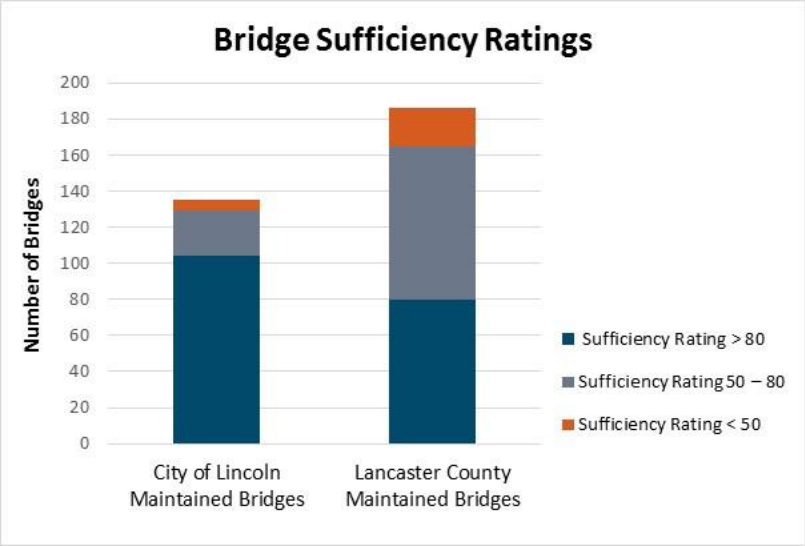
5

Performance Measure 5:
Bridge sufficiency ratings

Baseline Data:

City of Lincoln:
Percent of bridges with sufficiency rating > 80 = 77% (2017)
Percent of bridges with sufficiency rating > 50 = 99% (2017)

Lancaster County:
Percent of bridges with sufficiency rating > 80 = 43% (2017)
Percent of bridges with sufficiency rating > 50 = 89% (2017)



Desired Trend and Performance Target:

The City of Lincoln's target is to maintain at least 75 percent of bridges with a sufficiency rating above 80 and to increase the percentage of bridges with a sufficiency rating above 50 to 100 percent.

Data Sources:

- City of Lincoln Public Works and Utilities Department
- Lancaster County Engineer's Office

Why is this important?

Bridges provide important connections in the transportation system, providing vehicular, pedestrian, and bicycle crossings of highways and major roads, rivers, streams, and railroads, all of which would otherwise create barriers to transportation. Maintaining the City and County bridges to functional and safe conditions is a critically important component of achieving the maintenance goal.

Key Observations

The City of Lincoln had 5 bridges with a rating below 50 in the spring of 2015. Four bridges have since been rebuilt, leaving only one below 50 rating.

While a majority of Lancaster County bridges have a sufficiency rating above 50, 21 bridges fall below that level and are eligible for replacements.

How are we doing?

With 21 bridges falling below a sufficiency rating of 50, Lancaster County has had to close eight bridges to traffic due to safety concerns.

The City of Lincoln is meeting the performance target of 75 percent of bridges having a sufficiency rating above 80. Only one bridge in the City of Lincoln remains below a sufficiency rating of 50.

What does this mean?

A bridge's sufficiency rating measures its condition and ability to serve its intended function. Sufficiency ratings range from 0 to 100, with 100 being the best. A low sufficiency rating may result from structural defects, narrow lanes, low vertical clearance, or other factors that make it functionally obsolete. Bridges with ratings between 50 and 80 are eligible for rehabilitation, and bridges with ratings below 50 are eligible for replacement.

Maintenance

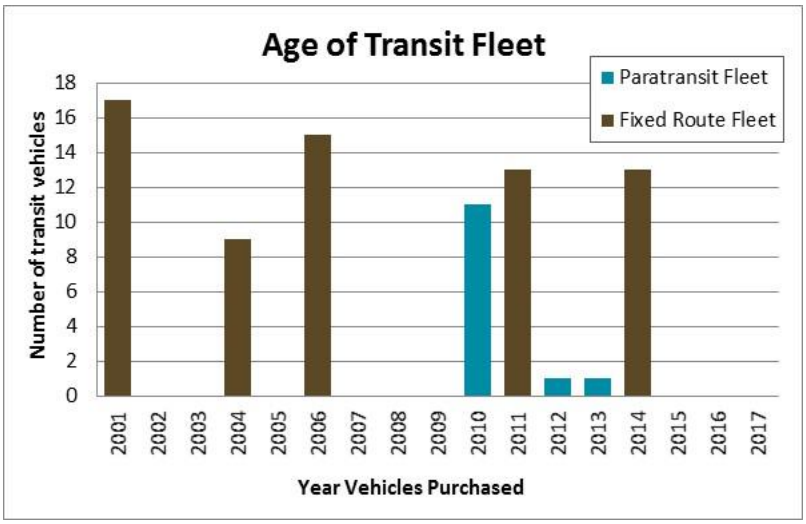
Goal: A well-maintained transportation system.

6

Performance Measure 6:
Age of transit vehicles

Baseline Data:

Number of transit vehicles 12+ years old = 26 (2017)



Desired Trend and Performance Target:

Reduce the number of transit vehicles 12+ years old.

Data Sources:

- StarTran's fleet inventory

Why is this important?

StarTran maintains a fleet of 67 fixed-route buses and 13 paratransit vehicles. All 80 vehicles are lift equipped. Within the next five years, more than half of the StarTran fixed-route fleet must be replaced, as vehicles are reaching the end of their useful lives.

Key Observations

The nine transit vehicles purchased in 2004 are now more than 12 years old and have been added to the list of vehicles that need to be replaced.

How are we doing?

No new transit vehicles were purchased in 2015, 2016, or 2017 to replace the aging fleet.

What does this mean?

As transit vehicles age, the costs to maintain the fleet become higher, and there is a greater risk of breakdowns, which can be highly disruptive to the transit operations and riders.

In 2018, StarTran will receive eleven new compressed natural gas (CNG) buses and two new CNG trolleys. In addition, StarTran was recently awarded a Federal Transit Administration (FTA) grant to purchase four electric buses.

Mobility and System Reliability

Goal: An efficient, reliable, and well-connected transportation system for moving people and freight.

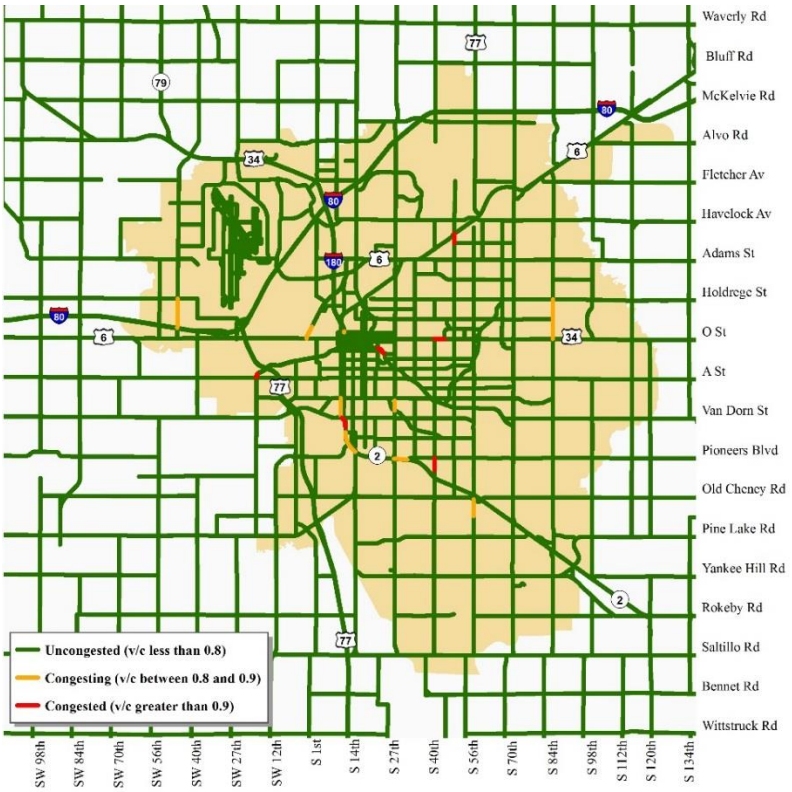
1

Performance Measure 1:
Congested roadways

Baseline Data:

Congested roadways (v/c > 0.9) = 0.5% of major road network within the City of Lincoln (2015)

Congested + congesting roadways (v/c > 0.8) = 1.5**%** of major road network within the City of Lincoln (2015)



Desired Trend and Performance Target:

Maintain at least 85 percent of roads in uncongested conditions.

Data Sources:

- City of Lincoln Public Works and Utilities Department traffic counts
- Lincoln MPO TransCAD Travel Demand Model.

Why is this important?

Comparing traffic volumes with planning level capacities can be used in assessing the current congestion levels on the road network. Because this analysis uses planning-level capacities and daily traffic volumes, it does not explicitly account for delays or congestion that may be experienced at a particular intersection. This analysis provides a high-level snapshot of the current congestion.

Key Observations

To perform this analysis, a volume to capacity (v/c) ratio is calculated using daily traffic volumes and planning level capacities assumed for each roadway classification, area type, and number of lanes.

How are we doing?

Currently, only 0.5 percent of Lincoln's major road network is congested, while another one percent of the road network is becoming more congested.

What does this mean?

Overall congestion on Lincoln's roadway network is very low. The target of maintaining at least 85 percent of roads in uncongested conditions is being met.

Note: This measure is calculated approximately every five years as an element of the Lincoln MPO Long Range Transportation Plan update process.

The Lincoln Congestion Management System (CMS) provides an on-going, systematic, transparent, and continuous way for transportation planning in the metropolitan area to identify and manage congestion in a multi-modal manner.

Mobility and System Reliability

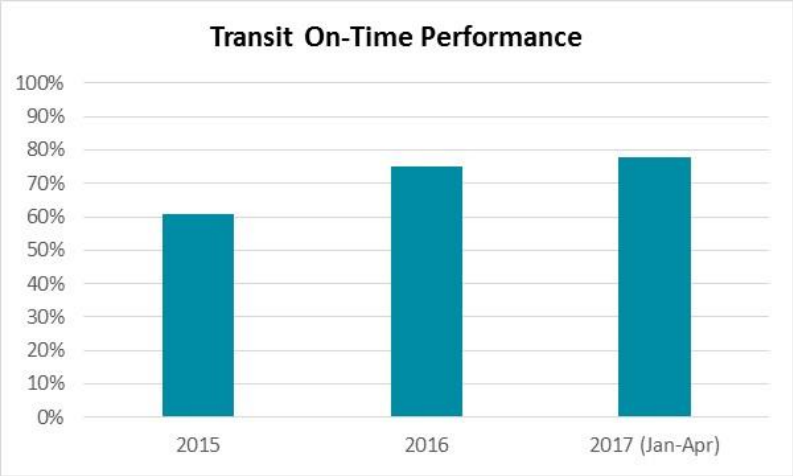
Goal: An efficient, reliable, and well-connected transportation system for moving people and freight.

2

Performance Measure 2:
Transit on-time performance

Baseline Data:

January – April 2017 = 78% on-time performance



Desired Trend and Performance Target:

Achieve 85 percent on-time performance.

Why is this important?

Transit on-time performance refers to the schedule adherence – that is, the percent of time the bus arrives according to the published schedule. A higher percentage means more buses are on time. This measure addresses the reliability of the bus service, and is an important measure of the utility of the service for passengers.

Key Observations

StarTran's on-time performance is calculated as the portion of trips that arrive within five minutes of the scheduled stop time.

How are we doing?

StarTran data from January through April 2017 show an on-time performance of 78 percent, and improvement over the 2015 and 2016 performance of 61% and 75%, respectively.

What does this mean?

StarTran's initial 2017 on-time performance was lower than the desired 85 percent. However, this is a marked improvement over on-time performance of prior years, likely as a result of the bus route changes that were implemented in October 2016.

Data Sources:

- StarTran vehicles are equipped with automatic passenger counters (APC) that also record the time vehicles arrive and depart time points.

Mobility and System Reliability

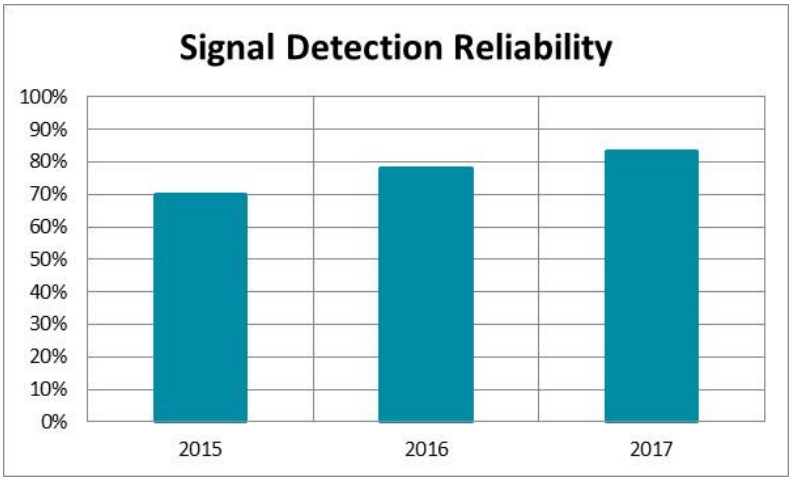
Goal: An efficient, reliable, and well-connected transportation system for moving people and freight.

3

Performance Measure 3:
Signal detection reliability

Baseline Data:

Signal detection reliability = 83% (2017)



Desired Trend and Performance Target:

Achieve 95 percent signal detection reliability

Why is this important?

Vehicle detection systems can detect vehicles arriving at a signalized intersection, sending a message to the signal controller that a vehicle is present. This message triggers the controller to give the waiting vehicle(s) a green indication. If the signal detection system is faulty, it may send false positive triggers to the controller, or conversely it may not detect a waiting vehicle. The reliability of the signal detection is important because it maximizes traffic flow efficiency.

Key Observations

The Green Light Lincoln initiative has resulted in considerable improvements to the signal detection reliability in the past two years.

How are we doing?

The current signal detection reliability is 83 percent, a significant improvement over the 70 percent reliability in 2015.

What does this mean?

Signal equipment upgrades and signal timing improvements have resulted in improved detection reliability, which means people experience less delay at signals.

Data Sources:

- Lincoln Public Works and Utilities Department, Traffic Engineering Section actively tracks signal detection reliability.

Livability and Travel Choice

Goal: A multimodal system that provides travel options to support a more compact, livable urban environment.

1

Performance Measure 1:
Miles of trails, sidewalks, and on-street bike facilities

Baseline Data:

Miles of Sidewalks = **1,950** (2017)

Miles of Trails = **248** (2017)

Miles of Commuter Trails = **130** (2017)

Miles of Park Trails = **118** (2017)

Miles of On-Street Bike Lanes/Routes = **142** (2017)

Desired Trend:

Increase the miles of the non-motorized transportation network to provide residents more options for travel.

Data Sources:

- Lincoln/Lancaster County Planning Department GIS database.

Why is this important?

Trails, sidewalks, and the street network (except for freeways) comprise the nonmotorized transportation network. Designated on-street bike facilities help to identify the best routes for bicyclists (bike routes) and to provide designated space for bicyclists (bike lanes). Trails, sidewalks, and on-street bike facilities are critical in providing travel choice options. As the network of nonmotorized infrastructure increases, residents have more options for travel and an increased quality of life.

Key Observations

In 2017, the City of Lincoln added bike lanes on 16th Street from Q Street to Vine Street and on Vine Street from 16th Street to Antelope Valley Parkway. New sidewalk miles were added in new residential areas along local and collector streets.

How are we doing?

Lincoln continues to expand its trail, sidewalk, and on-street bike networks. In 2018, the Lincoln MPO will be completing an On-Street Bicycle Facilities Plan, which will identify opportunities to further expand the network.

What does this mean?

The Lincoln MPO will be seeking input from the community to inform the development of the On-Street Bicycle Facilities Plan in 2018.

Livability and Travel Choice

Goal: A multimodal system that provides travel options to support a more compact, livable urban environment.

2

Performance Measure 2:
Annual transit ridership

Baseline Data:

Annual transit ridership = 2,275,343 (FY15-16)

Note: fiscal year is September 1 to August 30

Desired Trend and Performance Target:

Increase StarTran ridership by 5 percent per year.

Data Sources:

- StarTran's annual ridership inventory

Why is this important?

The availability of a wide variety of mobility options, such as walking, biking, transit, and driving, is critical to maintaining or improving the quality of life for residents. StarTran's fixed-route bus and paratransit service in Lincoln is an important element of mobility options for the community.

Key Observations

StarTran's bus routing was modified in October 2016 to improve service efficiencies and allow for expanded hours of operations and increased frequency on some routes.

How are we doing?

StarTran has seen a steady growth in systemwide ridership over the past decade, however 2015 and 2016 ridership numbers were less than the peak ridership observed in 2014.

What does this mean?

Although transit ridership has decreased in the last couple years, it remains an important part of Lincoln's transportation. Future service expansions identified in the April 2016 Transit Development Plan will require additional funding but are expected to increase transit ridership in the future.

Livability and Travel Choice

Goal: A multimodal system that provides travel options to support a more compact, livable urban environment.

3

Performance Measure 3:
Percent of transit supportive areas served

Baseline Data:

Percent of transit supportive areas served = 88% (2017)

Desired Trend and Performance Target:

The April 2016 Transit Development Plan identifies a standard of providing service to at least 90 percent of transit supportive areas.

Data Sources:

- StarTran's annual calculation using Public Works and Utility Department's GIS data

Why is this important?

Several studies have indicated that the distance an average person can reside from a bus route and still be considered to "have service" is one-quarter mile, which is approximately equivalent to a five-minute walk. Transit-supportive areas include major activity centers, employers or employment concentrations of 200 or more employees, health centers, middle and high schools, colleges/universities, shopping centers of over 25 stores, and social service/government centers. By providing transit service within one-quarter mile of these high-density areas, StarTran can optimize transit service in Lincoln.

Key Observations

StarTran implemented a new bus routing system in October 2016, as recommended in the April 2016 Transit Development Plan. One consideration in the rerouting was to focus service on transit-supportive areas. 2017 marks the first year of collecting this performance measure.

How are we doing?

In 2017, StarTran provides bus service to 88 percent of transit supportive areas.

What does this mean?

2017 performance is slightly below the target of 90 percent service to transit supportive areas. Additional funding is needed to expand transit service as recommended in the Transit Development Plan.

Livability and Travel Choice

Goal: A multimodal system that provides travel options to support a more compact, livable urban environment.

4

Performance Measure 4:
Projects incorporating Complete Streets elements

Baseline Data:

Project	Complete Streets (CS) Application
Bike racks (Downtown/Haymarket)	CS funded project
84th Street & Northern Lights (and city-wide)	Pedestrian activated button locations
10th St. Bridge (Charleston to Stadium Dr.)	Pedestrian concern with bike speeds
Dunn Ave. Sidewalk and Helen Boosalis Trail	CS completed project
Arlington Ave. Sidewalk and Rock Island Trail	CS completed project
52nd St. Sidewalk and MoPac Trail	CS completed project
Bike Share (city-wide) – 15 stations	CMAQ funded project
StarTran Transit Development Plan	Transit route updates
State Legislation LB 716	Provisions regarding bicyclists/pedestrians
Municipal Code review of status of bicyclists in crosswalks	Changes to bicycle ordinance
Municipal Code review of skate, skateboards, coasters and toy vehicles	Changes to ordinance
Long Range Transportation Plan and Comprehensive Plan	Performance measures and on-street bike facilities discussion
16th Street (Q to W), Vine (16th to Antelope Valley Pkwy) Concept	Addition of on-street bike facilities

Desired Trend:

The Lincoln Citizen's Transportation Coalition is recommending the Complete Streets policy be upgraded.

Data Sources:

- Lincoln's Complete Streets Committee.

Why is this important?

In September 2013, Mayor Beutler signed Executive Order 086476, which approved Administrative Regulation No. 35, establishing a policy for the development of Complete Streets. The purpose for this Executive Order/Administrative Regulation was to encourage the design and operation of a transportation system that is safe and convenient for all users, regardless of age, ability, or transportation mode through the development of Complete Streets.

Key Observations

The Executive Order/Administrative Regulation established a Complete Streets Committee to discuss how to implement Complete Streets within the community. The committee is an interdepartmental group composed of representatives from Planning, Public Works and Utilities, StarTran, Urban Development, Building and Safety, Parks and Recreation, and the Health Department.

How are we doing?

In 2016, the Complete Streets Committee members identified 13 projects, plans, and ordinances within their departments to be reviewed by the Committee. The Committee has an annual budget of $50,000 for project development.

What does this mean?

Several of the projects reviewed by the committee are completed or funded by the Complete Streets program. The committee was charged with ensuring proper integration of bicycle, pedestrian, and transit access in these 14 projects, plans, and ordinances.

Safety and Security

Goal: A safe and secure transportation system.

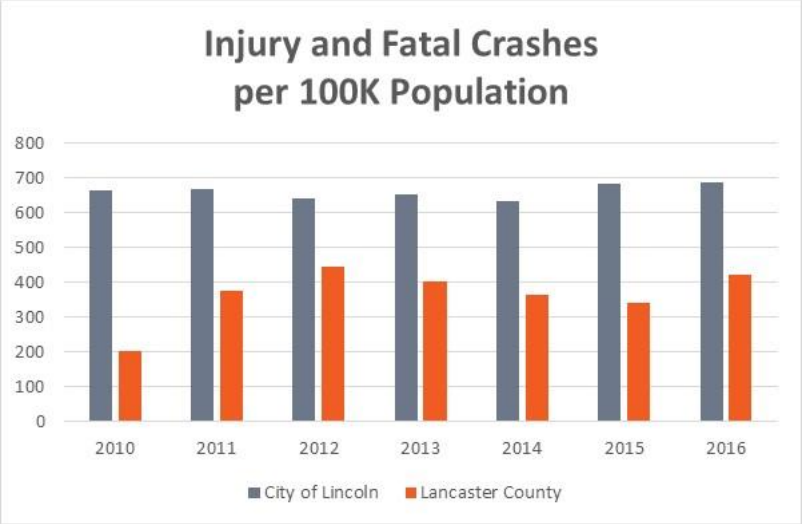
1

Performance Measure 1:
Injury and fatal crashes per capita

Baseline Data:

City of Lincoln:
Injury and fatal crashes per 100K population = 687 (2016)

Lancaster County:
Injury and fatal crashes per 100K population = 424 (2016)



Note: Lancaster County population is calculated as the total County population less the City of Lincoln's population.

Desired Trend and Performance Target:

Maintain an injury/fatal traffic crash rate of no more than 700 crashes per 100,000 population in the City of Lincoln.

Data Sources:

- City of Lincoln Public Works and Utilities Department
- Lancaster County Engineer's Office
- US Census data (annual population estimates)

Why is this important?

Traffic crashes are a major threat to public safety. Monitoring vehicle crash rates provides an understanding of how roadway safety improvements, vehicle safety advances, and driver education affect the number and severity of crashes. This measure tracks the number of injury and fatal crashes per 100,000 population.

Key Observations

Lancaster County's injury and fatal crash rate declined between 2012 and 2015, but an increase in injury and fatal crashes in 2016 resulted in a higher severe crash rate. Within the City of Lincoln, the injury and fatal crash rate increased in 2015 and 2016 over prior years.

How are we doing?

In 2016, there were 306 total crashes on Lancaster County roads, 119 of which involved injury and 5 of which were fatal. Within the City of Lincoln, there were 9,016 crashes in 2016, 1,920 of which involved injury and 6 of which were fatal. The City's injury/fatal crash rate remains below the target threshold of 700 crashes per 100,000 population.

What does this mean?

The City's Engineering Services Department and the County Engineer's Office continue to make strides toward improving traffic safety. These improvements include intersection improvements, signage, striping, signal timing, safety programs, driver education, and school safety programs.

Safety and Security

Goal: A safe and secure transportation system.

2

Performance Measure 2:

Percent of total crashes involving injury or fatality

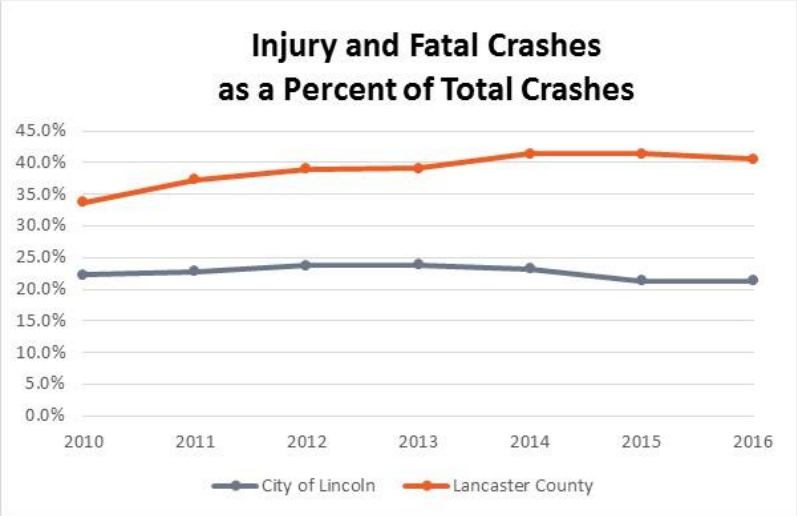
Baseline Data:

City of Lincoln:

Percent of total crashes involving injury or fatality = 23.3% (2014)

Lancaster County:

Percent of total crashes involving injury or fatality = 40.5% (2016)



Desired Trend and Performance Target:

Data Sources:

- City of Lincoln Public Works and Utilities Department
- Lancaster County Engineer's Office

Why is this important?

Traffic crashes are a major threat to public safety – particularly those crashes resulting in injuries or fatalities. The federal government has established a goal of eliminating serious injuries and fatalities on the highway system—the "Vision Zero" initiative is reflected in this performance measure.

Key Observations

Over the past five years, there has been an average of roughly 8,000 traffic crashes per year on Lincoln's transportation system and an average of approximately 280 traffic crashes per year on Lancaster County's roads. During the five-year time period (2012-2016), between 21 and 24 percent of the crashes in Lincoln have involved an injury or a fatality. The portion of injury or fatal crashes on Lancaster County roads has been higher—accounting for 39 to 41 percent of total crashes. This is not unexpected given the higher speeds on the county roads.

How are we doing?

The severity of crashes in Lancaster County dropped around one percent from 2015 to 2016 to a rate of 40.5%. The severe crash rate in Lincoln was approximately two percentage points lower in 2015 and 2016 than it has been in prior years – a positive trend.

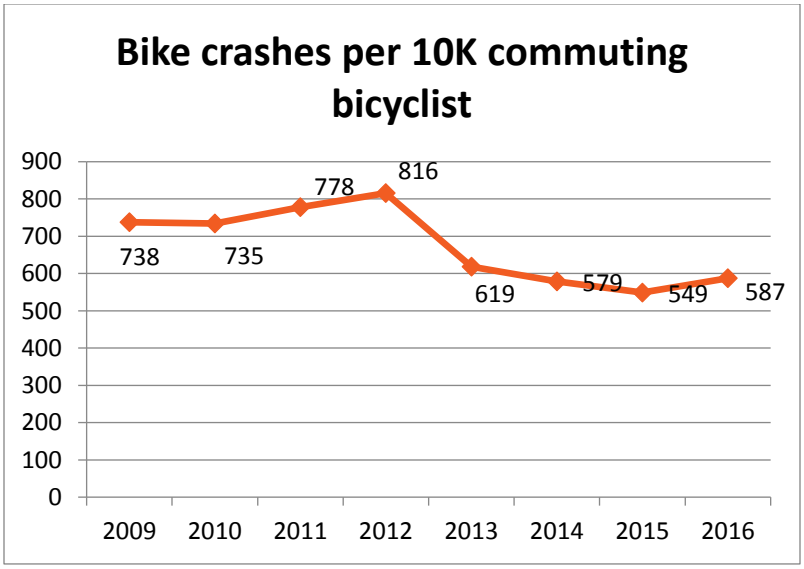
What does this mean?

The City's Engineering Services Division and the County Engineer's Office continue to make strides toward improving traffic safety. These improvements include intersection improvements, signage, striping, signal timing, safety programs, driver education, and school safety programs.

Performance Measure 3:
Bike crashes per 10K commuting bicyclists

Baseline Data:

Bike crashes per 10K commuting bicyclists in the City of Lincoln = 549 (2015)



Desired Trend and Performance Target:

The League of American Bicyclists (LAB) uses this measure as a key outcome for Bicycle Friendly Communities. The LAB's benchmark for bronze Bicycle Friendly Communities is 370 or fewer bicycle crashes per 10K commuting bicyclists.

Data Sources:

- City of Lincoln Public Works and Utilities Department (bicycle crash data)
- American Community Survey (ACS) 5-year estimates (commuting bicyclists)
- Note: A rolling 5-year average is used to monitor changes in this measure over time. For example, the 2016 data point is based on the number of bike crashes in Lincoln in 2016 and on the 5-year estimate of commuting bicyclists for 2012–2016.

Why is this important?

Crashes with motorized vehicles are a considerable safety risk to cyclists. The ideal data to monitor bicycle-involved crash rates are not available. This measure is a commonly used indicator that normalizes the bicycle-involved crash data (which are readily available) with the estimated number of commuting bicyclists in Lincoln (reported by the American Community Survey) as a surrogate for total bicycle activity.

Key Observations

In the past eight years, there has been an average of 141 bicycle-involved crashes per year in the City of Lincoln.

How are we doing?

There were 126 reported bicycle crashes with motor vehicles in 2015, the lowest number of bicycle crashes over the past eight years. Since 2009, the number of commuting bicyclists in Lincoln has increased approximately 42 percent. The resulting crash rate (as shown in the table to the left) shows a downward trend, particularly in the last three years.

What does this mean?

Bicycle commuting activity in Lincoln is increasing, while the rate of bicycle crashes is decreasing. This a positive trend for the safety of bicyclists in Lincoln. There is a need to continue to improve safety for bicyclists in Lincoln.

Safety and Security

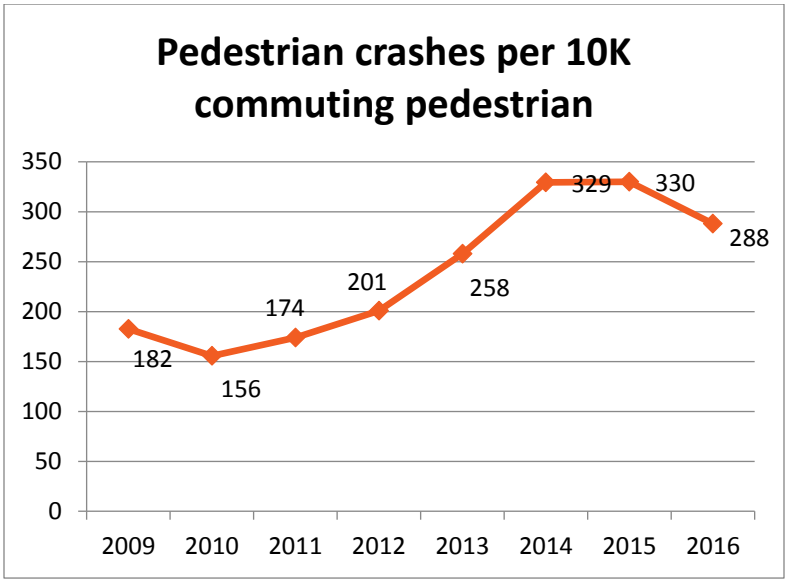
Goal: A safe and secure transportation system.

4

Performance Measure 4:
Pedestrian crashes per 10K commuting pedestrians

Baseline Data:

Pedestrian crashes per 10K commuting pedestrian in the City of Lincoln = 330 (2015)



Desired Trend:

Data Sources:

- City of Lincoln Public Works and Utilities Department (pedestrian crash data)
- American Community Survey (ACS) 5-year estimates (commuting pedestrians)
- Note: A rolling 5-year average is used to monitor changes in this measure over time. For example, the 2016 data point is based on the number of pedestrian crashes in Lincoln in 2016 and on the 5-year estimate of commuting pedestrians for 2012–2016.

Why is this important?

Crashes with motorized vehicles are also a safety risk for pedestrians. Similar to the bike crash rate performance measure, this measure uses the number of commuting pedestrians (from ACS data) as a surrogate for the total level of pedestrian activity in Lincoln.

Key Observations

In the past eight years, there has been an average of 100 pedestrian-involved crashes per year in the City of Lincoln.

How are we doing?

There were 137 reported pedestrian crashes with motor vehicles in 2015, the highest number of pedestrian crashes over the past eight years. Since 2009, the number of commuting pedestrians in Lincoln has fluctuated, with a slight uptick in walking commuters in 2015. The resulting crash rate shows an upward trend from 2010 through 2014, with a leveling off in 2015. The number of pedestrian-involved crashes per year in the City of Lincoln dropped off for the first time in 2016 (as shown in the table to the left).

What does this mean?

The rate of pedestrian-involved motor vehicle crashes stayed nearly constant between 2014 and 2015. Even though there has been a slight drop pedestrian-involved motor vehicle crashes in 2016, there remains a need to continue to improve safety for pedestrians in Lincoln.

Safety and Security

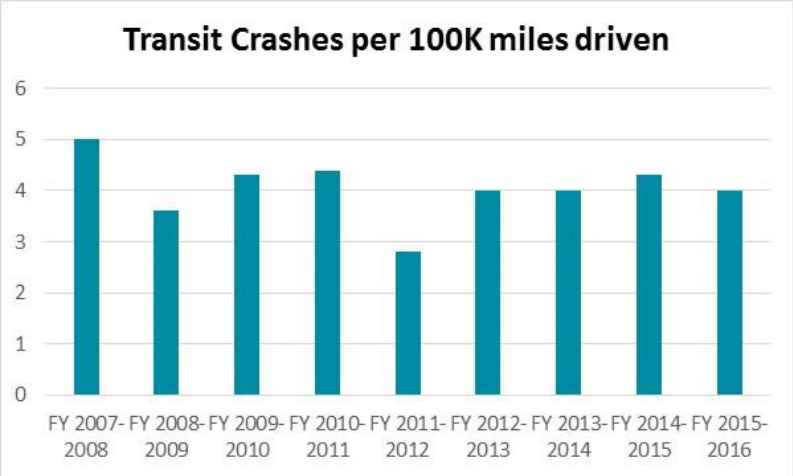
Goal: A safe and secure transportation system.

5

Performance Measure 5:
Transit crashes per 100K miles driven

Baseline Data:

Transit crashes per 100K miles driven = 4.0 (FY 2015-2016)



Note: fiscal year is September 1 to August 30

Desired Trend and Performance Target:

Maintain a crash rate of less than 3.8 transit crashes per 100,000 miles driven.

Data Sources:

- StarTran's annual calculation

Why is this important?

Riding the bus should provide a pleasant and safe riding environment for bus patrons. Crashes can cause injuries and disrupt patrons' riding experience.

Key Observations

StarTran recognizes that vehicle crashes cannot be completely avoided but works to reduce their number and severity. StarTran bus drivers must have a Commercial Driver's License, complete 40 hours of classroom training on safety, and have approximately 120 hours of supervised training behind the wheel before they are authorized to drive on their own.

How are we doing?

During Fiscal Year (FY) 2015/2016, there were four transit crashes for every 100,000 miles driven by StarTran buses.

What does this mean?

StranTran's crash rate has been slightly higher than the target rate of 3.8 per 100K miles driven for the past few years. This target was lowered to 3.8 based on past performance and the need to have a new target to strive towards.

A crash occurs when a bus collides with a stationary or moving object (another vehicle or an object). The number of crashes is then compared to the number of miles driven annually by StarTran buses. Crashes are assessed by the Accident Review Board, which consists of StarTran staff, bus drivers, and Lincoln Police Department. The Board determines if a crash was preventable or non-preventable as a basis for management to potentially assign disciplinary action.

Safety and Security

Goal: A safe and secure transportation system.

6

Performance Measure 6:

Number of programs/campaigns related to safety and security

Baseline Data:

The following safety related public awareness campaigns were implemented in 2017:

- Flashing yellow arrow public service announcements on social media and Channel 8 (City television); fliers at Division of Motor Vehicle (DMV) locations
- N Street Cycle Track public service announcements
- Roundabout informational sharing on the City's website

Desired Trend and Performance Target:

Increase public awareness about safe behaviors and the use of the new elements of the transportation system.

Data Sources:

- City of Lincoln Public Works and Utilities Department

Why is this important?

Educational programs and public information campaigns can serve as a highly effective means of improving safety and security by changing behaviors of travelers of all modes. Safety campaigns can cover a broad range of topics and should be focused to best reach the target audience for the particular topic. Examples of safety campaign topics include sharing the road (with bicyclists and pedestrians), wearing seatbelts, minimizing distracted driving, avoiding aggressive driving, stopping drunk driving, etc.

Key Observations

The City has focused its public safety campaigns on relatively new elements of the transportation network: flashing yellow arrows, roundabouts and the N Street Cycle Track.

How are we doing?

Public service announcements have helped to bring awareness to the proper use of these new elements of the transportation network.

The Lincoln-Omaha-Council Bluffs Association of Transportation Engineers (LOCATE) presents a Drive Smart program to High School student classes twice a year. The LOCATE programs share messages such as the use of seatbelts and avoiding impaired and distracted driving.

What does this mean?

The City plans to continue using public service announcements to educate the community about safe behaviors and use of the transportation system. Upcoming public service announcement will focus on the use of Rectangular Rapid Flashing Beacons (RRFBs) and bicycle and pedestrian safety.

Economic Vitality

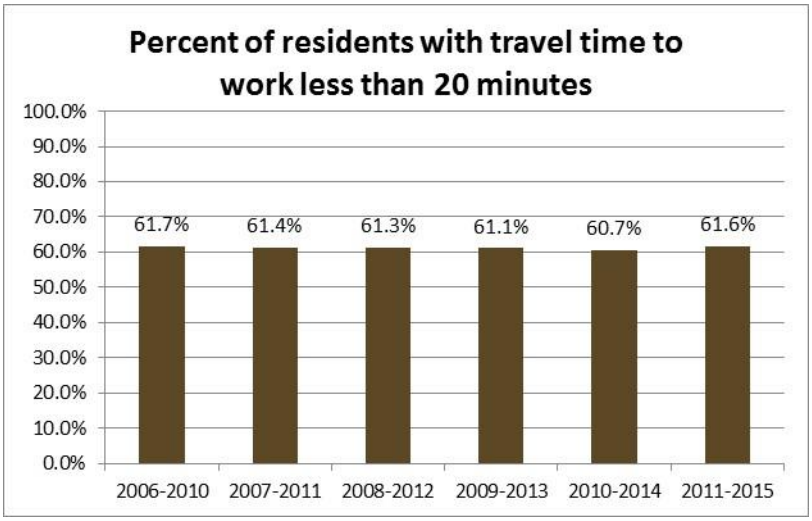
Goal: A transportation system that supports economic vitality for residents and businesses.

1

Performance Measure 1:
Travel time to work

Baseline Data:

Percent of Lincoln residents with travel time work < 20 minutes = 61.6% (2011–2015)



Desired Trend and Performance Target:

Maintain 60 percent or more of City residents reporting travel time to work as less than 20 minutes.

Data Sources:

- American Community Survey (ACS) 5-year estimates
- Note: A rolling 5-year average is used to monitor changes in this measure over time.

Why is this important?

Many factors influence the amount of time it takes to travel between home and work, such as mode of travel, the availability of desirable housing near job centers, and levels of traffic congestion. A lower travel time to work generally reflects a high quality of life and lower household transportation costs.

Key Observations

The percent of Lincoln residents who reside within a 20-minute commute of their place of work has remained very consistent in recent years.

How are we doing?

Based on the 2011-2015 American Community Survey, 61.6 percent of Lincoln residents live within a 20-minute commute of their place of work. This represents a nearly one percent increase over the previous 5-year estimate.

What does this mean?

A majority of Lincoln residents enjoy a relatively short commute time.

Economic Vitality

Goal: A transportation system that supports economic vitality for residents and businesses.

2

Performance Measure 2:
Jobs accessible in a 30-minute transit ride

Baseline Data:

Average number of jobs in Lincoln accessible in 30-minute transit ride = 90,187 (2014)

Desired Trend:

Improve transit connectivity, access, and frequency for all Lincoln residents to maintain or improve access to jobs with a 30-minute (or less) transit ride.

Why is this important?

The number of jobs accessible in a 30-minute transit ride reflects the potential of employees to travel by transit. The number of jobs accessible in a 30-minute transit ride can be increased by expanding the transit service (expand existing routes, add new routes), by increasing the number of jobs along transit routes, or by using a combination of both approaches.

Key Observations

The Center for Neighborhood Technology (CNT) All Transit application is the largest source of transit connectivity, access, and frequency data in America. The value indicates that, on average, a household in the specified geographic area (the City of Lincoln) could access the specified number of jobs by riding transit a half hour or less.

How are we doing?

Over 90,000 jobs in Lincoln are accessible within a 30-minute transit ride. With approximately 149,000 jobs in the same data period, roughly 61 percent of jobs are accessible by a 30-minute transit ride.

What does this mean?

A majority of jobs in Lincoln can be accessed by a 30-minute (or less) transit ride.

Data Sources:

- Center for Neighborhood Technology; Housing and Transportation (H+T) Affordability Index (jobs accessible in 30-minute transit ride)
- Longitudinal Employer-Household Dynamics, US Census (total jobs)

Economic Vitality

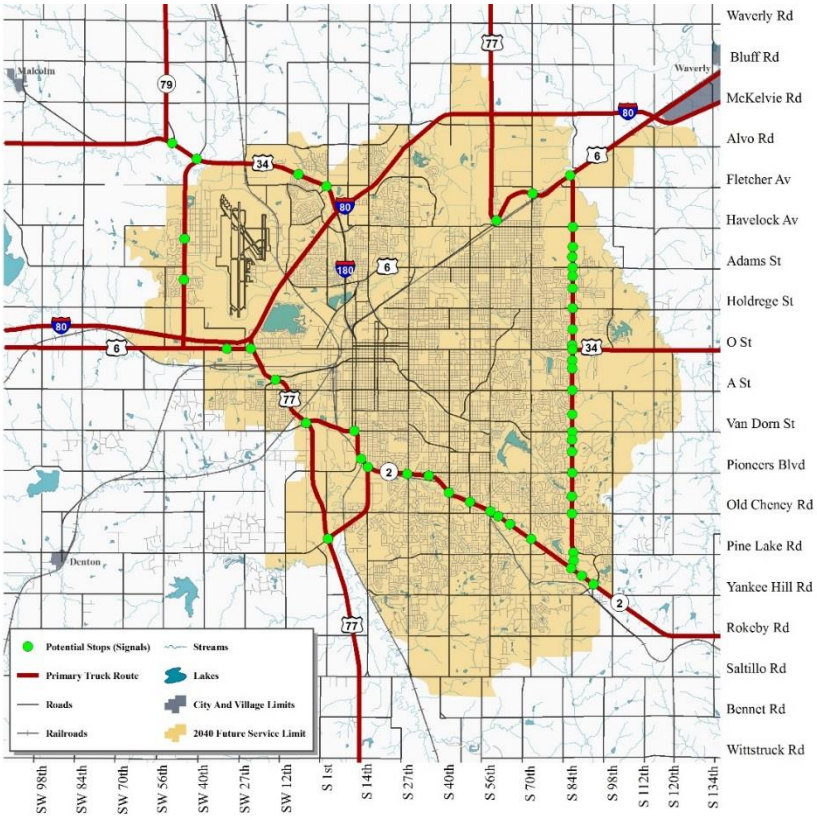
Goal: A transportation system that supports economic vitality for residents and businesses.

3

Performance Measure 3:
Number of potential stops on primary truck routes

Baseline Data:

Number of potential stops on primary truck routes = **51** (2017)



Desired Trend and Performance Target:

The proposed Lincoln South Beltway and the Green Light program is expected to greatly improve freight movement.

Why is this important?

The efficient movement of freight through Lincoln's transportation system is an important aspect of economic vitality. Access-controlled facilities such as interstates and expressways offer an efficient means for freight to be transported in and out of the Lincoln area. Trucks also use several arterial streets as a part of the primary truck route network, many of which have signalized intersections at half-mile or less intervals.

Key Observations

The number of potential stops along Lincoln's primary truck routes has not changed in the last two years.

How are we doing?

There are 51 signals along Lincoln's primary truck routes – each of which represents a potential stop (and associated delay) for moving freight through the City.

What does this mean?

These signalized intersections represent potential stops for trucks, which can result in slower travel times. The fewer signalized intersections that trucks are exposed to, the more efficient freight movement on the roadway network can be.

The proposed Lincoln South Beltway will improve freight movement throughout the Lincoln area.

Data Sources:

- City of Lincoln Public Works and Utilities Department, GIS database.

Economic Vitality

Goal: A transportation system that supports economic vitality for residents and businesses.

4

Performance Measure 4:
Exposure rating of railroad at-grade crossings

Baseline Data:

Railroad at-grade crossings with exposure rating > 100K = 15 (2017)

Rank	Street Crossing	Daily Exposure		
		Vehicles	Trains	Rating
1	Old Cheney Road	14,560	46	669,760
2	Adams Street	10,800	48	518,400
3	N. 33rd Street	9,250	48	444,000
4	Park Boulevard	8,400	46	386,400
5	Saltillo Road	7,180	44	315,920
6	N. 70th Street	4,950	48	237,600
7	S. 14th Street	4,705	46	216,430
8	A Street	8,500	22	187,000
9	S. 1st Street	2,100	76	159,600
10	South Street	3,300	46	151,800
11	Pioneers Boulevard	3,370	44	148,280
12	W. Van Dorn	6,500	22	143,000
13	N. 44th Street	2,600	48	124,800
14	N. 141st Street	2,350	46	108,100
15	Folsom Street	4,800	22	105,600

Desired Trend and Performance Target:

The Railroad Transportation Safety District (RTSD) is actively working to reduce the number of high exposure at-grade rail crossings.

Data Sources:

- NDOT Rail and Public Transportation Division

Why is this important?

A network of railroad tracks extends radially from central Lincoln; the railroad lines are important to the local economy. Many railroad crossings within the street network are at-grade and result in safety problems and travel delays, negatively impacting the local economy.

Key Observations

The daily railroad crossing exposure rating (daily trains multiplied by the number of vehicles per day) reflects the potential for crashes between trains and motor vehicles at crossings.

How are we doing?

There are currently 15 at-grade crossings with an exposure rating above 100,000.

What does this mean?

The Nebraska Department of Transportation (NDOT) – Rail and Public Transportation Division requires a minimum exposure rating of 50,000 to qualify for possible construction of a grade separation (underpass or overpass). The Railroad Transportation Safety District (RTSD) is actively working on a project that will eliminate at-grade crossings at Adams Street and N. 33rd Street. Another City project is under design which will reduce the exposure rating at Old Cheney Road by reducing traffic volumes. The RTSD is also investigating track relocation that would eliminate the A Street, W. Van Dorn, Folsom, and N. 141st Street crossings.

Environmental Sustainability

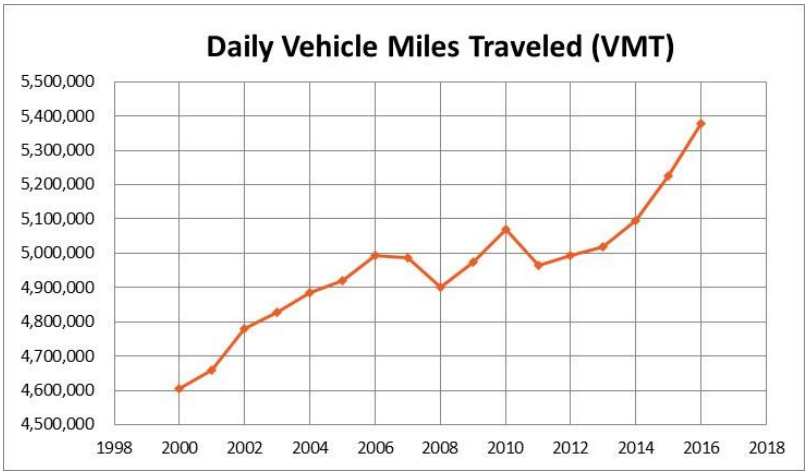
Goal: A transportation system that enhances the natural, cultural, and built environment.

1

Performance Measure 1:
Vehicle miles of travel (VMT)

Baseline Data:

Daily Vehicle Miles Traveled = 5,379,000 (2017)



Note: VMT estimates based on Urban Area Boundary

VMT Trend:

1996-2016: 20 year average Growth Rate = 1.14% per year
2006-2016: 10 year average Growth Rate = 0.72% per year
2011-2016: 5 year average Growth Rate = 1.54% per year

Desired Trend and Performance Target:

The goal is to slow or reduce the rate of increase in vehicle miles traveled per capita in Lincoln.

Why is this important?

Vehicle miles traveled (VMT) serves as a proxy for how well localities are incorporating the principles of accessible and walkable communities, increased public transportation and a shift away from development practices centered on the automobile. VMT correlates with several economic and lifestyle factors such as increased car ownership, dispersed development patterns, low unemployment rates, and gross domestic product.

Key Observations

The rate of increase in vehicle miles traveled in Lincoln slowed considerably between 2006 and 2014 due in part to increased fuel prices and the economic downturn. In 2015 and 2016, VMT increased significantly compared to past years.

How are we doing?

In 2016, 5.4 million vehicle miles were traveled on Lincoln's streets each day, which equates to roughly 19 miles per person.

What does this mean?

Over the past 16 years, VMT on Lincoln's streets has increased 17 percent. Although this has been caused by several factors, it has resulted in increasing demand on public infrastructure.

Data Sources:

- Lincoln/Lancaster County Planning Department

Environmental Sustainability

Goal: A transportation system that enhances the natural, cultural, and built environment.

2

Performance Measure 2:
Mobile source emissions

Baseline Data:

Daily Emissions Totals

Emission Type	2015
Volatile Organic Compounds (tons VOC) – Summer	4.6
Nitrogen Oxides (tons NO_X) – Summer	8.4
Carbon Monoxide (tons CO) – Winter	47.7
Greenhouse Gases (tons CO_2 Equivalent) – Summer	3,591
Greenhouse Gases (tons CO_2 Equivalent) – Winter	2,840

Note: Mobile source emissions are calculated approximately every five years as an element of the Lincoln MPO Long Range Transportation Plan update process.

Desired Trend:

The goal is to slow or reduce the rate of increase in mobile source emissions per capita in Lincoln.

Data Sources:

- Lincoln MPO regional travel demand model and Motor Vehicle Emission Simulator (MOVES2014) calculations

Why is this important?

Air quality is important for public health, environmental sustainability, and a good quality of life. Mobile source emissions are a significant contributor to overall air quality. The five air pollutants shown in the table to the left are commonly associated with motor vehicles.

Key Observations

The US Environmental Protection Agency has recently lowered some of the federal air quality standards (meaning they are more stringent), which relate to vehicle emissions.

How are we doing?

The Lincoln area is currently in attainment or unclassified for the National Ambient Air Quality Standards (NAAQS) under the Clean Air Act. Based on the 2040 Long Range Transportation Plan, the Lincoln area is expected to remain in attainment of the federal air quality standards in the future.

What does this mean?

Residents of the Lincoln area enjoy good air quality, and the air quality is expected to remain good going forward. In fact, future years are expected to see progressively lower emission rates due to federal emission regulations and improvements in vehicle technologies. As older vehicles are replaced with newer ones, lower emissions are expected.

Environmental Sustainability

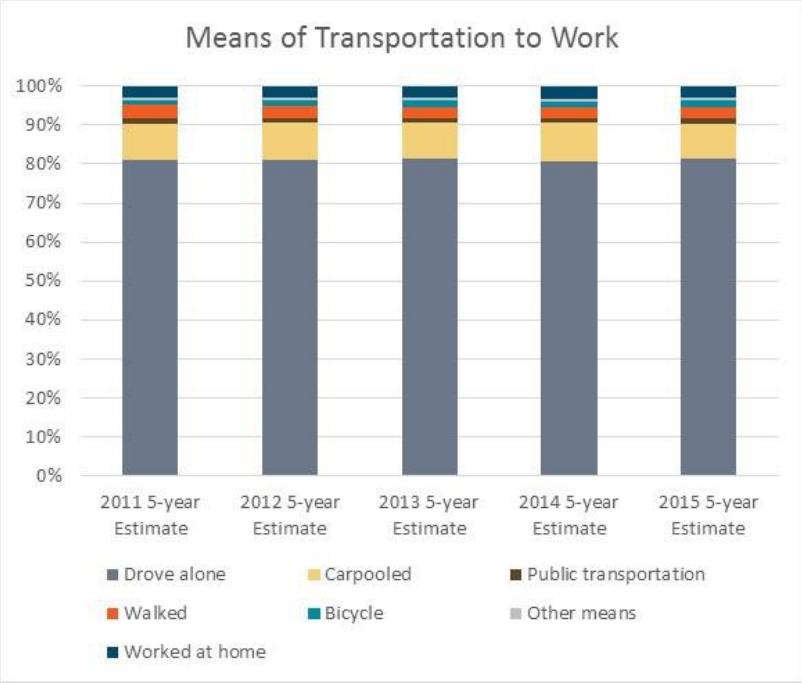
Goal: A transportation system that enhances the natural, cultural, and built environment.

3

Performance Measure 3:
Mode split

Baseline Data:

Mode share of non-SOV work trips in Lincoln = 18.7% (2015 5-year estimate)



Desired Trend and Performance Target:

The goal is to increase the mode share and percent of non-SOV work trips in Lincoln.

Data Sources:

- American Community Survey (ACS) 5-year estimates
- Note: A rolling 5-year average is used to monitor changes in this measure over time.

Why is this important?

The way in which workers get to and from work is an important transportation metric. Driving alone is by far the most commonly used mode of transportation in Lincoln. More than four out of five residents drive alone to work. Encouraging more residents to use commuting methods other than the single occupant vehicle (SOV) is important to enhance economic development and diversification, help build community ties, improve quality of life through modal choice, and promote a healthy lifestyle.

Key Observations

The portion of work trips made by non-SOV has remained very consistent in recent years at approximately 19 percent.

How are we doing?

The 2015 5-year estimate shows that Lincoln residents used the following modes to travel to work:

- 81.3% drove alone (SOV)
- 9.1% carpooled
- 1.4% used public transportation
- 2.9% walked
- 1.6% bicycled
- 0.6% used other means (taxi, motorcycle)
- 3.1% worked at home

What does this mean?

Many factors impact the mode choice by commuters including, but not limited to, fuel prices, travel time, infrastructure conditions and availability, education, convenience, income, weather, parking (for bike or vehicle), cultural norms, availability of showers/lockers at work, and overall personal preference.

Environmental Sustainability

Goal: A transportation system that enhances the natural, cultural, and built environment.

4

Performance Measure 4:
Number of alternatively fueled vehicles (AFVs) in fleet

Baseline Data:

StarTran (2017):
13 Compressed Natural Gas (CNG) buses

City of Lincoln (2015):
1 CNG library bookmobile
6 CNG passenger sedans
1 biofuel passenger sedan
38 electric hybrid passenger sedans

Total: 59 AFVs (2017)

Desired Trend:

StarTran will continue to increase the AFV fleet in 2018 and as resources become available.

The City of Lincoln is adding 3 additional hybrid sedans to the city fleet in fiscal year 2018 with an approval to add more, subject to funding.

Data Sources:

- City of Lincoln Public Works and Utilities Department
- StarTran

Why is this important?

Increasing the share of AFVs in the region contributes to the objectives of reducing air pollutant emissions and dependency on fossil fuels. Alternative fuel refers to fuels that are used in place of gasoline and diesel fuel; the US Environmental Protection Agency refers to them as clean fuels and defines them as those fuels that create less pollution than today's gasoline. The US Department of Energy lists AFVs as biodiesel, electricity, ethanol, hydrogen, methanol, natural gas, propane, p-series, and solar energy.

Key Observations

No new AFVs have been added to StarTran or City of Lincoln fleets in the past two years.

How are we doing?

StarTran currently has 13 Compressed Natural Gas (CNG) buses, and the City of Lincoln has 46 AFVs (of various fuel sources) in their fleet.

What does this mean?

Although no new AFVs have been added recently, StarTran will receive 11 new CNG buses and 2 new CNG trolleys in 2018, and StarTran was recently awarded a Federal Transit Administration (FTA) grant to purchase 4 electric buses, along with electric charging stations, a transformer, and staff training on electric buses.

Environmental Sustainability

Goal: A transportation system that enhances the natural, cultural, and built environment.

5

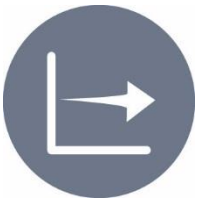
Performance Measure 5:

Miles of minimal impact projects (2+1) completed

Baseline Data:

Street Segment	Length (miles)	Year
Adams St from 57th St to 63rd St	0.44	2011
Holdrege St from 70th St to 79th St	0.62	2011
N. 70th St from Aylesworth Ave to X St	0.39	2011
Fremont St from 48th St to 70th St	0.23	2011
Pioneers Blvd from Hwy 2 to 56th St	1.65	2012
S. 56th St from Randolph St to South St	1.00	2013
North 1st St from Superior St to Cornhusker Hwy	1.5	2013
Van Dorn St from 33rd St to 37th St	0.25	2015

Desired Trend:



The City of Lincoln will construct additional 2+1 cross-section streets as resources and opportunities are developed.

Why is this important?

Preserving the value and character of existing neighborhoods is an important consideration and efforts should be made to minimize impacts on established neighborhoods and investments. In the past, many transportation projects in our country displaced citizens, destroyed valuable cultural resources, and displaced or divided neighborhoods. Transportation planning has since evolved to include a strong link to environmental justice, which is both desirable and required. It is vitally important that the residents, particularly those with larger underrepresented populations, be involved in transportation planning decisions and that these decisions consider and work to protect those resources important to neighborhoods.

Key Observations

No additional 2+1 projects have been constructed since 2015.

How are we doing?

Most of the streets that have been identified for a 2+1 cross-section have been constructed. The remaining streets that have been identified will be constructed as the needs arise and funding is available.

What does this mean?

The City of Lincoln uses a 2+1 cross-section, that is two travel lanes (one in each direction) with a striped two-way left turn lane, instead of widening to a full four-lane road where contextually appropriate. This cross-section can increase mobility and enhance safety with minimal impacts to the surrounding land uses.

Data Sources:

City of Lincoln Public Works and Utilities Department

Funding and Cost Effectiveness

Goal: Collaboration in funding transportation projects that maximizes user benefits.

1

Performance Measure 1:
Cost per user of completed projects

Baseline Data:

Not available. The Lincoln Citizen's Transportation Coalition is discussing the use of and potential methodology for this performance measure.

Desired Trend and Performance Target:

Not available.

Why is this important?

Projects should not be compared strictly on the basis of costs. A large project will have a high cost; however, that project may have a profound positive effect on the overall transportation system. Both costs and benefits must be evaluated when prioritizing projects. A benefit-cost analysis is frequently used to demonstrate economic justification for transportation projects. Because a benefit-cost analysis requires extensive data and analysis to monetize a project's benefits (many of which are difficult to readily monetize), this performance measure—cost per user of completed projects—represents a simplified approach to considering the cost effectiveness of public investment in transportation projects.

Key Observations

Not available.

How are we doing?

Not available.

What does this mean?

Not available.

Funding and Cost Effectiveness

Goal: Collaboration in funding transportation projects that maximizes user benefits.

2

Performance Measure 2:

Proportion of completed projects subjected to life cycle cost analysis

Baseline Data:

Not available. The Lincoln Citizen's Transportation Coalition is discussing the use of and potential methodology for this performance measure.

Desired Trend and Performance Target:

Not available.

Why is this important?

Life cycle cost analysis evaluates the total economic worth of a transportation project by analyzing the initial capital costs and discounted future costs including maintenance, reconstruction, and operating costs over the life of the project. A life cycle cost analysis can be used in the alternatives analysis phase, providing a comparison of total cost of various investment options.

Key Observations

Not available.

How are we doing?

Not available.

What does this mean?

Not available.

Funding and Cost Effectiveness

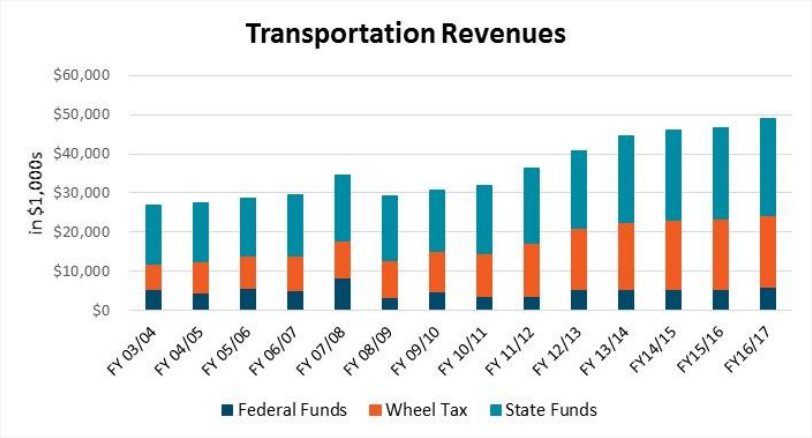
Goal: Collaboration in funding transportation projects that maximizes user benefits.

3

Performance Measure 3:
Annual funding for transportation projects

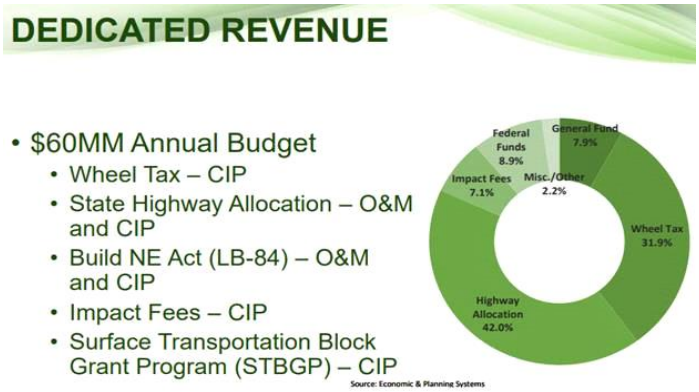
Baseline Data:

Annual funding for transportation projects = $60 million (FY 16/17)



Desired Trend:

Increase funding for transportation projects in order to address the transportation needs in the Lincoln Planning Area.



Data Sources:

- City of Lincoln Public Works and Utilities Department

Why is this important?

In the past, the primary source of funds for the nation's streets was the federal gas tax. But, the federal gas tax has been stagnant for more than 20 years, while construction inflation has increased an average of five percent per year. Local and state initiatives have been a tremendous help in closing the gap in transportation funding.

Key Observations

Transportation revenues have increased steadily since 2009.

How are we doing?

In Fiscal Year (FY) 2016/2017, the City of Lincoln had access to approximately $60 million in transportation funding that was used to fund street maintenance, roadway and intersection improvements, signal upgrades, transit operations, and bicycle and pedestrian enhancements.

What does this mean?

Although funding for transportation projects has increased every year since 2009, the transportation revenues have not kept pace with the construction cost inflation of approximately five percent per year.